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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Revision Of The Commission's Rules To Ensure Compatibility With Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102 RM-8143
	)	
Texas RSA 15B2 Limited Partnership	)	File No. _____
	)	
Licensee of Cellular Radiotelephone Service Station KNKN691, Market No. 666(B2), Texas 15(B2) - Concho RSA.	)	

To: The Commission

PETITION FOR WAIVER OF SECTION 20.18(C) OF THE RULES

Texas RSA 15B2 Limited Partnership ("the Petitioner"), by its attorney and pursuant to the Commission's Order, Mimeo DA 98-2323, released November 13, 1998 ("Order") in the referenced rulemaking proceeding, hereby requests the Commission to waive the requirements of Section 20.18(c) of the Rules, effective January 1, 1999. In support hereof, the following is shown:

1. The Petitioner is the licensee of Cellular Radiotelephone Service Station KNKN691, the Frequency Block B cellular system serving the B2 Segment of the Texas 15 - Concho RSA. Four of the twelve cellular base stations in the Petitioner's cellular system operate with both standard analog channels and Time Division Multiple Access ("TDMA") digital channels. The remaining eight cellular base stations are analog only.

2. Insofar as relevant here, Section 20.18(c) of the Rules

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relates to the transmission of 911 calls made from Text Telephone ("TTY") devices using digital wireless systems. In its Order, the Commission acknowledged the October 30, 1998 filing by the Cellular Telephone Industry Association ("CTIA") of the Workplan of the Wireless TTY Forum. The Commission characterized the October 30 Workplan as identifying "possible solutions for TTY access over digital wireless systems,"[1] thus acknowledging that the technology does not presently exist to transmit 911 calls from TTY devices over digital wireless systems. Accordingly, in the Order, the Commission: a) extended the suspension of enforcement of Section 20.18(c) of the Rules through December 31, 1998; and b) established procedures pursuant to which wireless carriers subject to the requirements of Section 20.18(c) of the Rules may petition the Commission for waivers of such requirements which, if granted, will take effect on January 1, 1999, after the suspension of enforcement expires.

3. At this juncture, the Petitioner wishes to emphasize that a waiver of Section 20.18(c) of the Rules does not appear to be required in this case. In the Order, the Commission established "a waiver mechanism that requires carriers to provide specific information (including well-documented timetables and milestones) regarding their plans to comply with the requirements of Section 20.18(c)"[2] of the Rules. The Commission took "this action because persons with disabilities who rely on TTY devices must be able to

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[1] Order, Para. 2.

[2] Order, Para. 4.

use 911 in emergencies, when lives may depend on effective communication with public safety personnel" Order, Para. 4 (emphasis in original). In this case, all of the Commission's objectives are met by the Petitioner's existing cellular facilities. As noted above, the Petitioner's cellular system is equipped with both analog and digital channels. The TTY devices operate on the Petitioner's existing analog channels, and, as a result, speech or hearing impaired individuals can use the Petitioner's existing cellular system to place 911 calls. Thus, the Petitioner's existing system clearly meets the requirements of Section 20.18(c) of the Rules.

4. To the extent that a waiver of Section 20.18(c) of the Rules is needed, it is clearly warranted here. At present, the equipment simply does not exist to permit the operation of TTY devices on digital channels, and the Commission has not yet determined the best means of accomplishing compliance with the requirements of Section 20.18(c) of the Rules, all of which has been expressly acknowledged by the Commission. In its Order, the Commission characterized CTIA's October 30 Workplan as suggesting that "carriers operating digital wireless systems will not be able to bring themselves into compliance with the requirements of Section 20.18(c) in the near future," but acknowledged "that the Forum has striven to develop voice-based and data-based solutions to the problems associated with successfully transmitting TTY calls over such systems" Order, Para. 5. The Commission encouraged the Forum to continue its efforts "since it has the opportunity to

serve as a vehicle to spur further discussion and analysis of possible solutions;" and stated that the Forum "should continue the task of providing test results and demonstrations on several potential methods for dealing with incompatibility between TTY devices and the different digital wireless technologies" Order, Para. 6 (emphasis added). Not only has the Commission acknowledged the nonexistence of the necessary technology, but it has also admitted that the best means for complying with Section 20.18(c) have yet to be decided. In this regard, the Commission observed that the "[c]ompletion of this testing and the provision of an evaluation of the test results by the Forum to the Commission will play a role in the Commission's determination of the best means to accomplish compliance with the requirements of Section 20.18(c)"[3] of the Rules. Clearly, a waiver of Section 20.18(c) of the Rules is warranted where, as here, the equipment does not exist to permit the operation of TTY devices on digital channels, and where the Commission has not yet determined the best means of accomplishing compliance with the requirements of Section 20.18(c) of the Rules. Given the circumstances, it is impossible to comply with the requirements of Section 20.18(c) of the Rules on digital wireless systems.

5. In Paragraph No. 11 of the Order, the Commission specified three categories of information that carriers should provide to support their waiver requests. These requirements are apparently intended "to require the carriers to demonstrate their commitment

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[3] Order, Para. 6.

to, and plans for, complying with Section 20.18(c)"[4] of the Rules. Consistent with these requirements, the following information is submitted:

6. **Category 1 - What steps the carrier is taking or intends to take to provide users of TTY devices with the capability to operate such devices in conjunction with digital wireless phones.**

7. **Response To Category 1**: The Petitioner's cellular system uses equipment manufactured by Lucent Technologies ("Lucent"). The Petitioner plans to install the equipment necessary to provide the users of TTY devices with the capability to operate such devices on the system's digital channels as soon as practicable after the equipment becomes available from Lucent and from the manufacturers of TTY handsets.

8. **Category 2 - When the carrier intends to make this capability available to TTY users. This information should include well-documented timetables and milestones from the carrier regarding the implementation of this capability.**

9. **Response To Category 2**: The development of timetables and milestones for the implementation of this capability is a function of, and contingent upon, the availability of equipment from Lucent and from the manufacturers of TTY handsets. The current state of development is described in the attached statement received from Lucent (See Attachment A). The Petitioner plans to install the necessary equipment within six months of the date the equipment is available. However, it should be emphasized, as noted in Paragraph

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[4] Order, Para. 10.

No. 3 above, that the Petitioner's present system has the capability on the existing analog channels.

10. **Category 3 - What reasonable steps the carrier will take to address the consumer concerns referenced in the Commission's Order, Mimeo DA 98-1982, released September 30, 1998 (the "September 30 Order").**

11. **Response To Category 3**: The consumer concerns are listed on the Appendix to the September 30 Order, a copy of which is attached hereto as Attachment B for ease of reference. These consumer concerns deal with technical issues which are a function of the equipment to be developed by the equipment manufacturers. The Petitioner will address these consumer concerns by installing state-of-the art equipment that complies with all applicable regulatory requirements, as soon as such equipment is developed and becomes commercially available.

WHEREFORE, good cause shown, the Petitioner requests that the instant petition be granted.

Respectfully submitted,

Texas RSA 15B2 Limited Partnership

By: _____
Robert M. Jackson
Its Attorney

Blooston, Mordkofsky,
Jackson & Dickens
2120 L Street, N.W.
Washington, D.C. 20037
Tel.: (202)659-0830

Dated: December 4, 1998

Attachment A

Lucent Work in Progress and Plans for TTY Solution Deployment

Lucent and PCC (Philips Consumer Communications) undertook a joint stuc on behalf of BAM (Bell Atlantic Mobile) in order to examine a number of different in-band alternatives that would permit adequate transmission of TTY/TDD signals over digital wireless channels. The criterion for acceptability applied to any particular solution was parity with analog cellula service. It was taken for granted that a suitable means for providing an electrical connection between the mobile terminal and the TTY device would be available. The study first addressed the problem of characterizing the performance of each applicable air interface technology (GSM, IS-136, IS-9 and Analog) in terms of the character error rate (CER) experienced by the TTY/TDD application.

The results of the study showed that the vocoder contribution to CER is negligible, and that the predicted CER is primarily a function of the frame erasure rate (FER), with the CER being equal to roughly 9 times the FER. It was determined that the TDMA air interface technologies were already performing at a level equivalent to analog cellular, i.e. if the radio environme was sufficiently good to get a call up at all, the TTY/TDD application would experience an acceptable (<1%) CER as long as the terminal remained stati and the radio environment remained the same. The CER increased significantly once the terminal began moving. This agreed with theoretical predictions since the FER in the GSM and IS-136 systems is primarily due t Rayleigh fading, which occurs as a result of motion. However, because IS-9 employs active power control to equalize the co-interference experienced by all the users, IS-95's performance in anything other than an extremely lightly loaded network would be considerably worse than all the other air interface technologies. The solution recommended to BAM for CDMA was one that required modifications to the mobile terminal only, and involved combining adaptive transmitter power control for the reverse link and a receiver/repeate algorithm for the forward link. It was thought that this solution would provide acceptable performance in the shortest time with the least impact to the industry.

PCC proposed this solution to the TIA and the notion of adaptive transmitter power control was not received well by the represented vendor community. Judgement was reserved regarding the receiver/repeater approach pending more concrete demonstration of its ability to solve the problem. In early November, Lucent presented simulation results to the TIA, showing that up t an 80% reduction in CER could be achieved for a 2% FER channel using the receiver/repeater approach. That is, the CER was reduced from about 18% to well below 1% by the application of this algorithm. The revised proposal was that the receiver/repeater would be implemented on both links, i.e. in the terminal for the forward link and in the infrastructure for the reverse link.

The advantages of this approach relative to the G.718/IS-707 based approaches proposed by Qualcomm and others are:

- minimal system impact,
- no need for additional/special terminals or equipment (other than minor modifications to the vocoder firmware and the physical connection to the phone mentioned earlier - all solutions require that)
- no standards impact - the approach is completely interoperable with unmodified CDMA systems, and
- the ability to terminate TTY/TDD calls transparently, even when made in-band from a land-based TTY device to the mobile. This capability cannot be provided by the "data" approaches.

The contribution was received with interest in TIA TR45.5.1.1, and was forwarded to both the CDG and the CTIA TTY Forum for consideration.

In order to provide an end-to-end solution to a customer, Lucent needs a mobile manufacturer partner that would agree to implement the receiver/repeater on a terminal. It was initially conceived that PCC would be that partner, but given the unfortunate demise of PCC, this partnership is now out of the question. Initial dialogs have been undertaken with a number of other mobile manufacturers, and the response has been positive. One vendor in particular, is very interested in pursuing a field trial that would make use of their fully-programmable phones. Since that phone uses the same DSP platform for the vocoder as Lucent's PHV-3/4 product, there will be a lot of opportunity for synergistic development of the code to support the trial. For this to happen Lucent plans to do the following:

1. Lucent to complete the end-to-end simulation to further verify results - end of 1998
2. Lucent to implement the simulation (currently written in Matlab and C) in DSP assembler - 6/99
3. Lucent and mobile vendor arrive at a business agreement for the collaboration - (Dialogue initiated)
4. A date for a complete solution to be available to a carrier is dependent upon # 3 above.

Dialogue on item 3 with internal Lucent Organizations that negotiate external business agreements has been initiated. A firm date for a final business agreement cannot be stipulated at this time.

Other consumer concerns: Lucent is reviewing these and can provide more detailed information at a later date.

APPENDIX

September 10, 1998

To: TTY Forum

Fr: Consumer Representatives

The CTIA has said that most of the consumer criteria previously submitted were not usable by the TTY Forum because the criteria covered marketing and distribution as well as design. Marketing and distribution issues for a possible "one-phone-model-per-technology" short-term plan will be taken up with CTIA's senior management, as suggested by them.

This contribution is a new set of criteria to address only functional characteristics of the solutions. The new criteria also reflect new information from the Forum since the first list was drawn up. It is intended to cover any solution.

1. The character error rate should approximate that of AMPS, which has been demonstrated at $<1\%$ for stationary calls. More research on AMPS performance with TTY would be useful to assist in specifying a range of conditions.

2. The TTY caller must be able to visually monitor all aspects of call progress provided to voice users. Specifically, the ability to pass through sounds on the line to the TTY (so that the user can monitor ring, busy, answered-in-voice, etc.) should be provided.

3. There must be a visual indication when the call has been disconnected.

4. A volume control should be provided.

5. The TTY user must have a means of tactile (vibrating) ring signal indication.

6. The caller must be able to transmit TTY tones independent of the condition of the receiving modem. (This is to permit baudot signalling by pressing a key, to let a hearing person know that the incoming call is from a TTY.)

7. The *landline* party's TTY must not require retrofitting in order to achieve the desired error rate.

8. The *wireless* party's TTY may require retrofitting, or a new model TTY to be developed, or the use of a portable data terminal such as a personal digital assistant.

9. VCO and HCO should be supported where possible.

10. Reduction of throughput (partial rate) on Baudot is highly undesirable and should not be relied upon to achieve compliance (see #7). It may be useful as a user-selectable option to improve accuracy on a given call.

11. Call information such as ANI and ALI, where provided in wireless voice, should also be provided for TTY calls.

12. The solution need not support little-used or obsolete TTY models, but in general should support the embedded base of TTYs sold over the past ten years. The landline equipment supported must not be limited to that used in Public Service Answering Points (911 centers).

13. Drive conditions must be supported, again using AMPS as a benchmark.

Declaration

I, Scott S. Parker, hereby state the following:

1. I am an officer of Kerrville Cellular, Inc. ("KCI"). KCI is a general partner in CGKC&H Rural Cellular Limited Partnership ("CGKC&H"). CGKC&H is, in turn, the general partner in Texas RSA 15B2 Limited Partnership ("the Partnership"). The Partnership is the licensee of Cellular Radiotelephone Service Station KNKN691, the Frequency Block B cellular system serving the B2 Segment of the Texas 15 - Concho RSA.

2. I have read the foregoing "Petition For Waiver Of Section 20.18(c) Of The Rules," which is to be filed with the Federal Communications Commission by the Partnership. With the exception of those facts of which official notice can be taken, all facts set forth therein are true and correct to the best of my own personal knowledge, information and belief.

I declare under penalty of perjury that the foregoing is true and correct on my own personal knowledge. Executed on this 3rd day of December, 1998.

/s/ Scott S. Parker

Scott S. Parker